

## **REMARKS**

Please reconsider the present application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering the present application and indicating that claims 11-14 and 19 contain allowable subject matter and claims 15, 16, and 20 are allowable.

### **I. Disposition of Claims**

Claims 1-20 are currently pending in the present application. By way of this reply, claims 3, 4, 7, 10-14, and 18-20 have been amended. Claims 1, 2, and 17 have been canceled without prejudice or disclaimer.

### **II. Allowed Claims**

Claims 15, 16, and 20 have been allowed. Applicant thanks the Examiner for carefully reviewing and allowing these claims.

### **III. Claim Amendments**

Claims 3, 18, and 20 have been amended to clarify the present invention. No new matter has been added by way of these amendments as support for these amendments may be found, for example, in Figure 2 of the present application.

Claims 4, 7, 10-14, and 19 have been amended to be consistent with the amendments made to claims 3, 18, and 20. No new matter has been added by way of these amendments.

#### **IV. Rejection(s) under 35 U.S.C § 102**

Claims 1-3 and 7-9 of the present application were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. patent No. 5,239,299 issued to Apple et al. (hereinafter "Apple"). Initially, Applicant notes that claims 1 and 2 of the present application have been canceled by way of this reply, and thus, the § 102 rejection of claims 1 and 2 is now moot. With respect to claims 3 and 7-9, for the reasons set forth below, this rejection is respectfully traversed.

The claimed invention relates to a digitizer for converting an analog signal output from an electronic device to a digital signal. The present application is directed to providing an A/D conversion type digitizer and a semiconductor testing apparatus that can correct phase shifts of sampling between a plurality of A/D converters so as to precisely reproduce an analog signal. *See* Specification, paragraph [0007]. The claimed digitizer includes the plurality of A/D converters **52a, 52b, 52c, 52d** and the plurality of digital filters **56a, 56b, 56c, 56d** each correcting a digital output signal from a corresponding A/D converter and outputting a corrected digital signal.

Accordingly, amended independent claim 3 requires, in part, a plurality of A/D converters and a plurality of digital filters that obtain a correction coefficient based on a phase error in sampling timing of their associated A/D converter and multiply the converted digital signal by this correction coefficient outputting a corrected digital signal. Thus, the claimed digitizer outputs digitized signals at intended timing with corrections and can produce digitized signals more accurately.

Apple, in contrast to the present invention, is directed to a method for compensating for variations in the characteristics of individual analog-to-digital

converters found in a time interleaved analog-to-digital converter circuit. *See* Apple, Abstract. As shown in Figure 4 and described in Column 4, line 18, Apple merely teaches an inverse filter for four interleaved analog-to-digital converters **41a, 41b, 41c, 41d**. Apple does not describe a configuration of the plurality of digital filters. Furthermore, as shown in Figure 4, Apple uses delays **50a, 50b, 50c, 50d** to allow for time delays sufficient to compensate for the time required for the operation of the digital filters **F1, F2, F3**. Thus, Apple fails to disclose or otherwise teach a plurality of digital filters which obtain a correction coefficient based on a phase error in sampling timing of their associated A/D converter and multiply the converted digital signal by this correction coefficient, outputting a corrected digital signal as required by independent claim 3 of the present application.

In view of the above, Apple fails to show or suggest the present invention as recited in independent claim 3 of the present application. Thus, independent claim 3 is patentable over Apple. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

**V. Rejection(s) under 35 U.S.C § 103**

*Claim 10*

Claim 10 of the present application was rejected under 35 U.S.C. § 103(a) as being unpatentable over Apple in view of U.S. Patent No. 6,081,215 issued to Kost et al. (hereinafter “Kost”). For the reasons set forth below, this rejection is respectfully traversed.

As discussed above, Apple fails to disclose or teach each and every limitation of amended independent claim 3 of the present application. Like Apple, Kost fails to disclose all the limitations of amended independent claim 3 of the present application or supply that which Apple lacks. Kost, which is directed to an apparatus for wide bandwidth analog to digital and digital to analog signal conversion, is silent as to a plurality of digital filters which obtain a correction coefficient based on a phase error in sampling timing of their associated A/D converter and multiply the converted digital signal by this correction coefficient, outputting a corrected digital signal as required by independent claim 3 of the present application. Accordingly, Kost fails to disclose those limitations of amended independent claim 3 of the present application not disclosed or taught in Apple. Therefore, Apple and Kost, whether considered separately or in combination, fail to render amended independent claim 3 obvious. Dependent claim 10 is patentable for at least the same reasons. Thus, withdrawal of the rejection of claim 10 is respectfully requested.

Claims 4-6, 17, and 18

Claims 4-6, 17, and 18 of the present application were rejected under 35 U.S.C. § 103(a) as being unpatentable over Apple in view of Japanese Patent No. 20-00346913 A issued to Tajiri et al. (hereinafter “Tajiri”) and Tajiri et al. “A Method to Improve the Performance of High-speed Waveform Digitizing” (hereinafter “the Tajiri Article”). Initially, Applicant notes that claim 17 of the present application has been canceled by way of this reply, and thus, the § 103 rejection of claim 17 is now moot. With respect to claims 4-6 and 18, for the reasons set forth below, this rejection is respectfully traversed.

The present application is directed to providing an A/D conversion type digitizer and a semiconductor testing apparatus that can correct phase shifts of sampling between a plurality of A/D converters so as to precisely reproduce an analog signal. *See* Specification, paragraph [0007]. Accordingly, amended independent claims 3 and 18 require, in part, a plurality of digital filters which obtain a correction coefficient based on a phase error in sampling timing of their associated A/D converter and multiply the converted digital signal by this correction coefficient, outputting a corrected digital signal.

As discussed above, Apple fails at least to disclose this limitation of independent claims 3 and 18 of the present application. Tajiri and the Tajiri article fail to teach or otherwise disclose the limitations of independent claims 3 and 18 or teach that which Apple lacks. Tajiri is directed to enhancing the cost performance of an interleave A/D conversion system waveform digitizer apparatus. *See* Tajiri, Abstract. The Tajiri article is directed to improving the speed of performance of a high-speed waveform digitizer. Both references are silent as to a configuration of digital filters where a plurality of digital filters obtain a correction coefficient based on a phase error in sampling timing of their associated A/D converter and multiply the converted digital signal by this correction coefficient, outputting a corrected digital signal as recited in amended independent claims 3 and 18.

In view of the above, Apple, Tajiri, and the Tajiri article, whether considered separately or in any combination, fail to show or suggest the present invention as recited in amended independent claims 3 and 18 of the present application. Thus, amended independent claims 3 and 18 of the present application are patentable over Apple, Tajiri

and the Tajiri article. Dependent claims 4-6 of the present application are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

## **VI. Objections to claims**

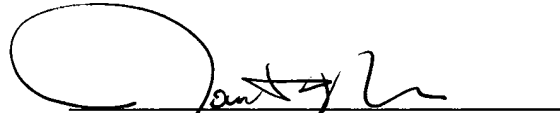
The Examiner objected to claims 11-14 and 19 as being dependent upon a rejected base claim. Because Applicant has shown that claims 3 (on which claim 11 depends), 11 (on which claim 12 depends), 12 (on which claim 13 depends), 13 (on which claim 14 depends), and 18 (on which claim 19 depends) are patentable over the prior art, Applicant believes that claims 11-14 and 19 are similarly allowable. Accordingly, Applicant respectfully requests withdrawal of the objections to claims 11-14 and 19.

## VII. Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number [02008.120001]).

Respectfully submitted,

Date: 7/22/04



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